

Omoiotelus crocicollis Lac. Napo River.
Erotylus Debauvei De May. Between Quito and Napo.
Corynomalus cinctus Fabr. Napo River.
And eighteen other undetermined species.

NOTES ON ORTHOPTERA COLLECTED BY PROFESSOR JAMES ORTON ON EITHER SIDE OF THE ANDES OF EQUATORIAL SOUTH AMERICA. BY SAMUEL H. SCUDDER.

Hitherto, we have known almost nothing of the Orthoptera of the region explored by the party under Professor Orton. Chili on the south and New Grenada on the north are well represented in European cabinets, but the region midway between them has been represented in orthopterological science by a few scattered descriptions, principally of Phasmida and Blattariæ. It is therefore greatly to be regretted that these explorers did not bring home something more than this mere handful of specimens, which have proved such a comparatively great addition to our knowledge of the Ecuadorian fauna. A single hour's well directed search would certainly have tripled the number of species. Still we may congratulate ourselves upon what we have obtained, since thirty of the forty species enumerated are new and require the establishment of five additional genera; of these species all of the Gryllides, Locustariæ, Mantidæ and Forficulariæ, and all but one of the Acrydii are new; while only one of the four Phasmida and three of the nine Blattariæ have not been described; two of the genera, *Tropidacris* and *Lophaeris* have not been characterized here, because they form the subject of comparison with the other gigantic Acrydians, in the succeeding paper.

GRYLLIDES.

1. *Nemobius Ortonii* nov. sp.

Head luteous, varied above and on the vertex with dark fuscous and with two fuscous points on the front, at the base of the antennæ interiorly; mouth parts pallid; antennæ luteous, annulated distantly and minutely with fuscous. Pronotum luteous, with a slight median furrow; the anterior and posterior borders with a narrow, and the middle of the sides with a longitudinal, wavy, broader line of black; the upper surface variegated with black and furnished with short black hairs; on either side of the middle, but not reaching the furrow, and situated just in advance of the middle, a broad naked transverse stripe, reaching the lateral black band, twice as broad above as below. Tegmina

pallid at the sides, above variegated with pallid and dark fuscous, the veins sometimes of one, sometimes of the other color; wings pellucid, the costal border and spaces exposed in folding, discolored. Legs pallid, blotched with dark fuscous; the hind femora very stout, the hind tibiæ abundantly armed with long spines. Anal cerci very long, stout at base, rapidly tapering, dusky, furnished with long hairs; ovipositor scarcely exerted. Length of body .44 in.; of antennæ 1.25 in.; of tegmina .34 in.; of wings .62 in.; of hind femora .28 in.; of anal cerci .22 in. One ♀. Napo or Marañon.

2. *Platydictylus fasciatus* nov. sp.

Pale testaceous, the prothorax darker; head with a dusky line bordering the antennæ and the eyes; first joint of antennæ testaceous, beyond black; eyes large, globose, pyriform. Tegmina longer than body, testaceous with fuscous veins, the inner half with seven or eight obscure, oblique, fuscous bands nearly as broad as the spaces between; wings longer than tegmina, pellucid or slightly clouded, the costal edge fuscous, an obscure clouded longitudinal space at the apex near the bottom of the median field. Abdomen blackish above; ovipositor reddish, black at tip and on the side along the median line; at base curved strongly upwards; beyond bowed slightly in a reverse direction; anal cerci stout, pale, hairy. Length of body .85 in.; of tegmina 1.05 in.; of wings 1.27 in.; of ovipositor .62 in. One ♀. From Napo or Marañon.

3. *Trigonidium gracile* nov. sp.

Vertex of head fusco-luteous, front blackish, mouth part pale; basal two joints of antennæ blackish, beyond pale. Pronotum fusco-luteous, marked with fuscous; abdomen blackish fuscous. Tegmina dark luteous, nearly as long as the abdomen, wings blackish, with luteous veins, reaching far beyond the tegmina. Legs very slender, pale, the hind tibiæ with very long and slender spines on the apical half. Ovipositor reddish brown, blackish along the middle, falciform, slightly swollen at the middle, the tip upturned rather sharply and terminating in a very fine point; anal cerci very long and slender, the basal third pale, beyond fuscous. Length of body .17 in.; of wings .26 in.; of hind tibiæ .16 in.; of anal cerci .055 in.; of ovipositor .07 in. One ♀. Napo River.

LOCUSTARIÆ.

4. *Steirodon quadratum* nov. sp.

Head dark brown, sides of front paler; base of labrum black, lobe whitish; mandibles whitish; vertex dark brown, a band above

the eyes very dull luteous; vertex docked squarely in front, the neck constricted; basal joint of antennæ blackish, the rest reddish-brown, their apices blackish. Pronotum dull brownish fulvous, the anterior margin slightly emarginate and yellowish, the hinder margin scarcely raised, broadly rounded and nearly straight, margined distinctly but narrowly with black, the color extending anteriorly along the lateral carinæ more than one-third the way to the anterior margin; lateral carinæ square, sharp posteriorly; pleura marginate, especially in front. Tegmina grass green, the stridulating vein luteous, the margin next the pronotum, when at rest, black. Legs brownish yellow, hind tibiæ greenish. Length of pronotum .31 in.; breadth of same anteriorly .17 in.; do. posteriorly .26 in.; length of tegmina 2.38 in.; breadth of same .71 in.; length of hind tibiæ 1.33 in. One ♂. Guayaquil.

5. *Acanthodis ? antennatus* nov. sp.

Head smooth, green; antennæ pale green, of great length. Pronotum dull green, scabrous with frequent tubercules; front border straight; hind border slightly produced, broadly rounded, nearly straight. Tegmina green, longer than the abdomen, shagreened with an anastomosis of irregular veins, the tip produced anteriorly to a rounded point; wings hyaline, as long as the tegmina. Legs rather stout; foramina of anterior tibiæ large, oblong, obovate, open; foot pads of the terminal tarsal joints largely developed. Ovipositor long, broad, testaceous, the upper edge perfectly straight, basal half of blade of uniform breadth, the tip minutely pointed; anal cerci rather short, conical, luteo-fuscous. Length of pronotum .28 in.; of tegmina 1.35 in.; breadth of same .34 in.; length of antennæ 5.8 in.; of hind tibiæ .9 in.; of ovipositor .7 in.; breadth of same .08 in.; length of anal cerci .1 in. One ♀. Napo River.

6. *Meroncidium conspersum* nov. sp.

Head smooth, testaceous; the summit, vertex, first two joints of antennæ, borders of the antennal sockets and the lateral carinæ of front black; rest of antennæ reddish brown; mouth parts testaceous. Prothorax black above, and along the anterior and posterior borders at the sides, the rest testaceous; black portions very roughly scabrous with rounded elevations; prosternum bimucronate. Tegmina dark testaceous, the inner border black and covered with transverse black bars and spots; hind wings fuscous. Hind femora broad, compressed, the apical half with five or six black spines; hind tibiæ armed with four rows of rather short black spines. Ovipositor broad, sharply pointed, the lower edge slightly rounded, the upper edge nearly

straight, with a slight median elevation; basal half luteous, apical half and lower border black. Length of body 1.88 in.; of tegmina 2.1 in.; of hind tibiae 1.26 in.; of ovipositor .87 in.; breadth of same .18 in. One ♀. Napo or Marañon.

7. *Copiophora gracilis* nov. sp.

Vertical spine squarish at base, the apical two thirds conical; basal half furnished superiorly with a double row of tubercles directed forwards; inferiorly with a single prominent tubercle; above, and a little in advance of this on each side, a single smaller tubercle; the apex sharply pointed and turned a very little downward; front of mandible and upper edge of clypeus black. Tegmina with a few black points along the middle. Hind femora armed along the whole inferior carina with a row of distant sharply pointed spines, curved a little outwards. Length of vertical spine .23 in.; of pronotum .33 in.; of tegmina 1.35 in.; of hind femora .65 in. One ♂. Napo or Marañon.

8. *Conocephalus brevicauda* nov. sp.

Stout; first four joints of antennae, sockets of antennae, front of mandibles and upper edge of clypeus black; antennae luteo-fuscous, distantly and narrowly annulated with fuscous; tubercle of vertex very broad, short, the front slightly rounded, the neck a little constricted. Lateral carinae of pronotum edged with blackish fuscous; pleura well rounded beneath. Tegmina rather broad, sprinkled with black dots. Legs short and rather stout; ovipositor very short, sharply pointed. Length of body 1.25 in.; of pronotum .35 in.; of tegmina 1.7 in.; of hind femora .84 in.; of ovipositor .5 in.; breadth of same .08 in.; distance from centre of eye to tip of vertex .13 in. One ♀. Napo River.

9. *Conocephalus tenuicauda* nov. sp.

Slender, uniformly green. Tubercle of vertex short, broad, the front scarcely rounded, produced beneath to a blunt, very short, conical tooth. Lower edge of pleura of pronotum docked angularly in front. Tegmina slender, immaculate. Ovipositor very slender, long, not very sharply pointed. Length of body 1.1 in.; of pronotum .29 in.; of tegmina 1.57 in.; of hind femora .9 in.; of ovipositor .77 in.; breadth of same .04 in.; distance from centre of eye to tip of vertex .07 in. One ♀. Napo or Marañon.

PANOPLOSCELIS nov. gen.

Allied to *Listroscelis*. Head large, globose, the front very broad but slightly convex, with rather prominent lateral angles, the vertex

regularly and strongly convex, produced in front between the antennæ into a compressed lamina, bilaminate behind, cut transversely so as to be bidentate in front; sockets of the antennæ produced interiorly into a high rounded lamina; eyes globose, prominent; mandibles very large, hollowed exteriorly; maxillary palpi slender, last joint slightly swollen toward the apex and curved inwards, a little longer than the preceding three joints taken together; labial palpi stouter; first joint of antennæ large and stout, fully as long as the longitudinal diameter of the eye; second joint just half as thick, scarcely longer than broad; remaining joints simple and similar. Pronotum large, divided by two deep curved furrows into three sections; the anterior two as broad as the head; the posterior much broader and produced posteriorly into a high, rounded, nearly vertical lamina, protecting the organs of flight; prosternum bimucronate. Tegmina very short, coarse and stout, produced to a broad rounded point, the ♂ with greatly developed, laterally prominent, coarse and heavy stridulating organs; wings very short, nearly abortive; meso- and metasternum distantly bimucronate. Legs very long, very stout and very spiny; coxæ heavy, the angles produced to short spines, all the femora stout, the front with a double row of spines beneath, the inner the stouter, with three very large, stout and finely pointed ones on the inner surface near the apex; the middle with a double row beneath, the anterior the stouter; the posterior with a single row beneath externally, growing larger toward the tip; fore and hind tibiæ with four, and middle femora with three rows of stout spines; foramina of anterior tibiæ linear, very small; abdomen large, a little compressed.

10. *P. armata* nov. sp.

Head rugose, especially the front and sides, blackish brown; labrum and mandibles smooth; palpi and first joint of antennæ very dark mahogany brown; rest of antennæ black. Pronotum blackish brown, very rugose, the posterior edge slightly marginated. Tegmina dark brown, not nearly so long as the pronotum, rugulose; wings abortive, not half the length of the tegmina. Legs deep mahogany brown, the tarsi and all the knees darker; the bases of all the tibiæ externally warty, mahogany brown; spines tipped minutely with black. Abdomen obscure, dark mahogany brown, beneath darker, the stigmata yellowish, the appendages dull luteous. Length of basal joint of antennæ .14 in.; of apical joint of maxillary palpi .29 in.; distance from vertical spine to tip of labrum .7 in.; length of pronotum .7 in.; of tegmina .58 in.; breadth of tegmina, exclusive of tympanum .27

in.; breadth of tympanum .22 in.; length of wings .24 in.; of fore tibiæ 1.25 in.; of middle tibiæ 1.15 in.; of hind tibiæ 2.03 in. One ♂. Napo or Marañon.

DISCERATUS nov. gen.

Body curved slightly, a little compressed. Head bluntly rounded anteriorly, the front very declivent; sockets of the antennæ with an elevated rim, and between them the vertex produced into a low crater-like elevation with a slight ridge running from it in front; upper edge of clypeus bearing, on either side externally, a rather long, cylindrical projection, curved slightly downwards and rounded at the tip; eyes of medium size, prominent; palpi rather short and stout. Pronotum produced anteriorly, partially covering the head; posteriorly docked somewhat squarely, scarcely covering the mesonotum; the sides rather short, the lower edge a little rounded, higher behind than in front. Tegmina minute, wings wanting. Legs rather stout, the anterior pair long; the hind femora rather slender, not long; coxæ and sides of thoracic sterna produced into small blunt spines. Ovipositor very broad at base, curved pretty strongly, tapering rapidly, the tip pointed; anal cerci very short.

11. *D. nubiger* nov. sp.

Head smooth, front reddish, sides greenish yellow tinged with red; vertical projection and a median line posterior to it blackish; antennæ reddish, palpi pale. Pronotum reddish brown, edged with black anteriorly. Legs testaceous, the knees slightly dusky. Tegmina blackish, with luteous veins. Abdomen dark testaceous; ovipositor pale testaceous, bordered on the apical half and minutely dotted on the middle of the sides of the apical half with reddish; the apex sharply pointed; anal cerci pale, very short, blunt, conical. Length of body .95 in.; of pronotum .25 in.; of tegmina .12 in.; of fore femora .35 in.; of hind femora .52 in.; of ovipositor .42 in.; breadth of same at base .12 in.; length of anal cerci .06 in. One ♀. Salto, ten thousand feet above the sea, on the slope of the volcano of Antisana.

ACANTHACARA nov. gen.

Body curved, slightly compressed. Head produced; the vertex prolonged into a sharply pointed, long and curved thorn; front smooth, very declivent; first and second joints of antennæ large, remaining joints slender; eyes rather small, prominent, globose. Pronotum rather long, produced backward a little over the mesonotum, the sides short, rounded, with a broad and shallow lobe in the middle of

the posterior half; meso- and metanotum resembling the abdominal segments, unprovided with wings; the thoracic sterna exteriorly, and the coxæ internally bearing small, short, blunt spines. Legs slender, the posterior femora rather short. Ovipositor broad at base, pointed at tip (?), curved pretty strongly; anal cerci very short, conical.

12. *A. acuta* nov. sp.

Whole upper surface, from the tip of the vertical spine to the ovipositor, testaceous, with a median, blackish, frequently obsolete line from the base of the vertical spine to the penultimate abdominal segment; the sides bordered above with a dark fuscous streak from the eyes to the tip of the abdomen; under surface of vertical spine, and the space between and around the antennæ blackish; first joint of antennæ obscurely fuscous, the remainder luteous, distantly and narrowly annulated with fuscous. Legs luteous, banded and blurred with blackish fuscous; femora armed externally and internally at the tip, with a sharply pointed spine. Ovipositor reddish; anal cerci pale, rapidly tapering, pointed, sparsely pilose. Length of body .62 in.; of pronotum .17 in.; of vertical spine .07 in.; of hind femora .38 in.; of anal cerci .04 in. One ♀. Between Quito and Napo.

ACRYDII.

13. *Proscopia bulbosa* nov. sp.

Of a nearly uniform griseous color. Head somewhat hour-glass shaped, above the jaws tapering, but a little swollen, to a constricted neck, above which and just below the eyes the head expands again; vertex short, as long as the width of the head below the eyes, tapering a little to a rounded apex; surface scabrous with distant elevated points, the back with a median furrow between the eyes and upwards to the tip of the vertex with a slight median carina; front, between the lower edges of the eyes, with a long, lozenge shaped hollowing, containing a median carina. Prothorax swollen next the head and like the mesothorax scabrous with large, irregular, distant, raised points. Legs very slender, the hind femora greatly swollen at the base, rough with longitudinal rows of greatly elevated points; hind tibiæ with very minute spines. Length of head, exclusive of the vertex .28 in.; of vertex .04 in.; of prothorax .42 in.; of hind tibiæ 1.06 in.; breadth of hind femora at base .09 in. One ♂. Napo or Marañon.

14. *Proscopia sajan* nov. sp.

Greenish brown, the legs paler, with dusky tips to the femora; the head with a small testaceous spot just above the base of the mandi-

bles. Head rather smooth, long, uniformly tapering to the eyes, the vertex rather long, marginate, constricted slightly between the eyes; back of the head from between the eyes half way to the prothorax with an insignificant carina; front with a slight median ridge from eyes to labrum. Thorax scabrous with irregular, elevated, rough points, becoming very short, transverse ridges on the dorsum. Legs rather slender (the hind pair lost). Length of head, exclusive of vertex .37 in.; of vertex beyond eyes .08 in.; of antennæ .16 in.; of prothorax .42 in.; of fore tibiæ .52 in. One specimen, the abdomen of which is broken, from Napo or Marañon.

15. *Cephalocæma acuminata* nov. sp.

Body reddish brown. Head smooth, forming a greatly elongated cone, just below the middle of which the eyes are hardly prominent; above the eyes the tubercle becomes quadrate; below the eyes there is a rounded frontal carina. Prothorax slightly rugose with short, transverse, impressed lines and punctures; meso- and metathorax with slightly impressed curving lines and deeper punctures, which markings continue upon the basal segments of the abdomen, the lines becoming finer and more indistinct posteriorly. Legs slender. Length of body, exclusive of head 2.3 in.; whole length of head .8 in.; length of tubercle beyond the eyes .35 in.; of antennæ .16 in.; of prothorax .48 in.; of mesothorax .12 in.; of hind femora 1 in. One ♀. Between Quito and Napo.

16. *Xiphicera octomaculata* nov. sp.

Brownish; antennæ, excepting base, brownish fuscous; tubercle of vertex, viewed from above, twice as long as broad, the apex broadly rounded. Lateral carinæ of pronotum scabrous with frequent tubercles, anterior border with little raised points, posterior border less than a right angle. Tegmina, each with four long and slender, sometimes confluent, dull luteous spots, bordered heavily with black, and arranged along the costal border nearly to the tip; wings yellowish, with luteous veins and a black outer border, which is very broad at the apex and very narrow at the inner angle. Hind tibiæ having the inner row of spines greatly produced, in the plane of the movement of the leg, into long, nearly straight, black tipped spines, the upper ones very broad and flatly compressed at base. Length of body 1.6 in.; of tubercle of vertex .12 in.; of tegmina 1.52 in.; of hind femora 1 in.; of longest tibial spine .11 in. One ♂. Napo or Marañon.

17. *Lophacris Humboldtii* nov. gen. et sp.

Vertex, summit and upper portion of sides of head smooth; front

and lower portions of sides scabrous with minute pittings. Prothorax uniformly rugose, the crest very high, greatly compressed, anteriorly with four lobes, which have rounded summits, and the first of which projects considerably over the head; the anterior portion separated from the posterior by a deep but very narrow transverse excision; posteriorly there is first a single lobe nearly as large as the anterior ones, and behind it much smaller, and generally rather sharply bimucronate elevations; posterior border of prothorax barely making a right angle; prosternal spine long, stout, straight, smooth, or slightly punctured, scarcely tapering, the tip bluntly rounded. Tegmina large and broad; wings large, evidently roseate in part, but as the insect has been immersed in alcohol, the colors have faded. Length of body 4 in.; greatest height of pronotal ridge above a line drawn from the top of the head to the hinder tip of the pronotum .4 in.; length of tegmina 3.6 in.; of hind tibiæ 1.66 in. One ♀ from Napo or Marañon. Another ♀ from Guayaquil, brought home in a dried state, but almost consumed by insects, seems to belong to this species. So far as can be determined, the wings are colored with a delicate shade of pea green, and the veins in the posterior half are roseate; the pronotal crest is hardly so high or so strongly compressed as in the other specimens. The head and ovipositor of still another female, apparently of this species, were brought from Napo or Marañon.

18. *Tropidacris rex* nov. gen. et sp.

Head smooth above, the vertex and a dull reddish band on either side extending to the back of the head from the upper edge of the eye, minutely punctured; clypeus and labrum dull olivaceous brown, punctured; front rugulose; lateral carinæ prominent, sides of head sparsely furnished with fine hairs. Pronotum luteo-fuscous, scabrous with elevated, rounded, whitish points and abbreviated lines; median carina and posterior border edged with black; first and second lobes nearly connate, elevated posteriorly more than anteriorly. Tegmina obscure brownish fuscous, marked with olivaceous on the basal half and with pale luteous apically, the principal veins castaneous, the secondary veins olivaceous and luteo-olivaceous; wings red, marked with a very broad, external, blackish band, and with rows of multitudinous black spots, avoiding the cross-veins, giving the whole wing a tessellated appearance. Hind femora marked within and without with whitish, and furnished with an arcuate band at the tip; spines of hind tibiæ black. Length of body 3.9 in.; of tegmina 4.34 in.; of hind femora 1.72 in.; band on the outer edge of the wings .36 broad. One ♀. Guayaquil.

19. *Acridium occidentale* nov. sp.

Dark brown; the head smooth, with very minute, distant punctulations; frontal and lateral carinae very prominent; tip of labrum and edges of mandibles whitish. Prothorax profusely punctate, the median carina very slight; prosternal spine rather stout, long, scarcely tapering, excepting at tip, straight but inclining slightly backwards. Tegmina obscure brownish, outer half semiopaque with fuscous spots; wings hyaline. Hind femora externally flat and white, the carinae distinct, the hind tibiae with black tipped spines. Length of body 2 in.; of pronotum .39 in.; of antennae .68 in.; of tegmina 1.23 in.; of hind tibiae .96 in. Two ♀. Napo or Marañon.

20. *Acridium labratum* nov. sp.

Head, especially the frontal ridge, punctate, brownish, the edge of the labrum and terminal joints of the palpi pale; the carinae prominent; antennae pale fuscous, darker toward the tip; eyes large, oblong, prominent, separated above by a narrow space. Pronotum brownish, closely punctate, the median carina barely perceptible. Tegmina brownish, blotched indistinctly and abundantly with small fuscous spots; wings hyaline, with blackish veins, tinged with faint yellowish at the base, and blackish fuscous at the apical half of the costal margin. Legs brownish, tarsi edged with blackish; hind femora internally and externally flat and dark brownish fuscous, the external inferior carina yellowish; hind tibiae armed with black tipped spines. Length of body 1.23 in.; of tegmina 1.17 in.; of hind femora .66 in. One ♀. Napo or Marañon.

21. *Chrysochraon* ? *abbreviatum* nov. sp.

Brownish yellow; head smooth; lateral carinae of front distinct, prominent; median carina distinct, growing broader toward the clypeus. Pronotum docked squarely in front, broadly rounded behind, anteriorly smooth, posteriorly punctulate; median carina distinct, slight; lateral carinae not prominent, marked by a black line, which extends forwards to the eye. Tegmina brownish, immaculate, longer than the abdomen; wings pellucid, faintly nebulous, especially, but still very slightly, at the tip; costal margin blackish; hind tibiae obscure fuscous, with pale, black tipped spines; ovipositor reddish. Length of body .6 in.; of tegmina .5 in.; of hind femora .42. One ♀. Between Quito and Napo.

22. *Oedipoda bivenosa* nov. sp.

Head rather smooth, dull luteous, marked with black points and minute reddish brown blotches, arranged in irregular lines; antennae reddish, growing fuscous toward the tip. Prothorax finely scabrous,

less so on the anterior third; a distinct but not high median carina, and distinct, sharp, but not elevated lateral carinæ; posterior border forming a right angle, minutely bordered. Tegmina longer than the abdomen, brownish opaque, growing pellucid toward the tip, marked with blackish and blackish fuscous blotches, of which three are more prominent than the others, and are situated on the principal vein; the first and largest at one third the distance from the base to the apex; the second at one half that distance, and the third and smallest at two thirds that distance; the veins fuscous, excepting one prominent one in the middle of the wing, along the apical two thirds of the basal half, which is luteous; wings pellucid, the veins prominently fuscous, the base faintly washed with pale greenish yellow, the middle of the outer margin slightly nebulous, the basal half of costal margin a little fuscous. Legs brownish, marked with black points and furnished with black tipped spines; ovipositor pale luteous, edged and tipped with black. Length of body .83 in.; of tegmina .85 in.; of hind femora .46 in. One ♀. Ecuador.

23. *Amorphopa caiman* Sauss.

A single ♂, taken between Quito and Napo, is referred with some doubt to Saussure's species.

PHASMIDA.

24. *Bacteria* sp.

One specimen, labelled as coming from Napo or Marañon, the abdomen of which is entirely wanting, is referable to *B. molita* Westw., or *B. gracilis* Burm., but may not belong to either species. The middle pair of legs have both the femora and tibiæ very obscurely fasciated.

25. *Acanthoderus immanis* nov. sp.

Whole body rugose. Head with a median prominence, cleft in the middle nearly to the base, so as to form on either side a divergent, spinulose, compressed spur, three quarters of a line in length, and backed by a strong thorn. A pair of similar but erect thorns on the prothorax; four spines, the middle two of which are scarcely smaller, upon the anterior border of the mesothorax; from the outer edge of the middle of the mesonotum spring two strongly divergent, very stout, subconical prominences, armed at the tip with short but stout spines, and below the tip with elevated warts; these prominences are the largest on the body, and are fully one and one third lines in length, and nearly half a line broad at base; the anterior edge of the

metathorax bears a median prominence similar to that on the head, but with the spurs scarcely so divergent, and bearing at the tip longer and less frequent spinules; posteriorly the lower edge of the pleura of the metathorax is dilated into a flat, depressed, triangular, spinuliferous lamina, protecting the posterior coxæ; it is about four fifths of a line in length. The middle of the anterior half of each of the first five abdominal segments supports a pair of divergent thorns, from each of which a slender spiculiferous lamina extends backwards, those of opposite sides meeting in the middle of the posterior border; the sixth abdominal segment bears a median, elevated, rugose lamina, bifurcate anteriorly, its ridge rounded and armed posteriorly with three equal, triangular, compressed teeth; behind this segment the median carina is elevated and rugose. The legs throughout, but especially the femora, are armed profusely with laminated spines; the hinder portions of the apices of the joints on the basal half of the antennæ swollen. Length of body 1.2 in.; of antennæ 1.05 in.; of hind femora .4 in. It is allied to *A. Tisiphone* Westw. One ♂ from Napo or Marañon.

26. *Phasma putidum* Bates.

One ♂, two ♀ and one pupa from Napo or Marañon. The wings of both of the ♀ measure 2.3 in. in length, or a little more than those of Bates's specimens.

27. *P. Menius* Westw.

One ♀ taken in Ecuador seems to be referable to Westwood's species. The alternate joints of the antennæ are not marked at the base with a broad whitish ring, excepting in a few instances near the tip, and where the pale color extends also over the apex of the preceding joint; the centre of the tegmina is elevated into a triangular perpendicular lamina, the apex of which is rounded. The wings measure slightly more than one and a half inches in length.

MANTIDES.

28. *Stagmatoptera binotata* nov. sp.

Prothorax trigonal, the lateral border with small, flattened, laterally projecting spines, those at the base of the legs smaller and more uniform than the others; the spines of the fore tibiæ and tarsi black, except externally; a median spot on the interior surface of the tibiæ, near the point of reception of the apical tarsal spine, black. Tegmina green, a large median spot ferruginous, the inner edge in the ♂ nearly hyaline; wings hyaline, sprinkled with numerous quadrate,

yellowish spots (perhaps greenish in fresh specimens), seated upon the cross veinlets throughout nearly the whole wing; middle and hind tarsi blackish beneath. Length of prothorax ♂ 1.1 in., ♀ 1.46 in.; of tegmina ♂ 1.98 in., ♀ 1.85 in.; of fore tibiæ ♂ .62 in., ♀ .86 in. One ♂, one ♀. Napo or Marañon.

BLATTARIÆ.

29. *Phyllodromia pallipes* nov. sp.

Head piceous, labrum and clypeus luteous; basal three joints of maxillary palpi pale, apical two fuscous; antennæ black. Pronotum scarcely concealing the whole of the head, black, immaculate, minutely and rather sparsely punctulate; entire border minutely marginate. Tegmina dark castaneous, semidiaphanous toward the tip, costal edge yellowish; wings faintly fuliginous with dusky veins, costal edge, especially near tip, castaneous. Femora and tibiæ and most of the coxæ pale, the tibiæ suffused with yellowish brown, especially toward the apex; tarsi darker. Abdomen black; anal cerci nearly as long as the first hind tarsal joint, rather broad, pointed, black, the apex pale. Length of body, .58 in.; of body, including tegmina, .76 in. One ♂ from Napo or Marañon.

30. *Ischnoptera melana* Walk.?

My single specimen from Napo River does not wholly agree with Walker's description; it is not so dark, the tarsi are not tawny toward the tip, and the tegmina show no dusky markings near the apex.

31. *Periplaneta americana* (Linn.) Burm. One specimen from Napo or Marañon.

32. *Periplaneta australasiæ* (Fabr.) Burm. Two specimens from Napo or Marañon.

33. *Panchlora exoleta* Klug. One specimen from Napo or Marañon.

34. *Zetobora rudis* Walk. One specimen, unlabelled.

35. *Blabera cubensis* Sauss. Two specimens from Guayaquil.

36. " *femorata* nov. sp.

Head black, labrum and lower part of front luteous, the upper part of labrum with a transverse fuscous band; eyes separated from each other by a space greater than the length of the first antennal joint; palpi reddish brown; antennæ thick at base, tapering more rapidly than usual; first eleven joints piceous, shining, beyond dull blackish fuscous, apical third dull ferruginous, the apices of the joints tipped

above with fuscous. Pronotal shield irregularly ovate, the lateral angles equally distant from the front and hind border, the whole border slightly marginate, but the hind border obscurely; the front border well rounded, projected forward so as just to conceal the head, the hinder half of the sides forming an obtuse rounded angle with the hind border; the hind border slightly curved; pronotum ferruginous, whole hind border and half way to the lateral angles broadly bordered with black; a very large and broad discal spot with ill defined borders, its front broadly and deeply concave, so as to make it widely and rather sharply bilobed, with large, quadrangular, lateral expansions, and a well rounded, convex hind border scarcely reaching the marginal band; this spot encloses dull, indistinct, ferruginous markings in the shape of a **⊥**; the whole shield, and especially just in front of and behind the discal spot, minutely and transversely wrinkled. Tegmina fuliginous, paler toward the tip, with a dark fuscous, narrow, humeral stripe, becoming gradually fainter and scarcely extending over half of the tegmina; wings hyaline, costal border testaceous; legs very stout, fuscous above, fusco-luteous beneath; mesothorax and metathorax bordered above posteriorly with pale testaceous. Abdomen above uniformly dark castaneous brown, beneath ferruginous, the sides and terminal segment blackish fuscous; anal cerci short, stout, tapering, fuscous; terminal segment small, subquadrate, in my single specimen asymmetrical. Length of body 1.46 in.; of body including tegmina 1.94 in.; of antennæ 1.25 in.; of pronotal shield .46 in.; breadth of same .67 in. It is allied to *B. marmorata* Brunn. One ♂ from Napo or Marañon.

37. *B. armigera* nov. sp.

Head black, with two circular ferruginous spots just within the bases of the antennæ; eyes separated by a space scarcely so large as half the length of the first joint of the antennæ; antennæ slender, tapering; first fourteen joints piceous, shining; beyond dull fuscous, slightly washed with luteous toward tip. Pronotal shield broadly and irregularly ovate, the whole border slightly marginate, the hinder border obscurely so; the front border well rounded, the middle of the front scarcely produced and barely concealing the head, the lateral borders well rounded, the hind border very slightly produced and obtusely angulated; pronotum luteo-ferruginous, enclosing a large, shield shaped, piceous, immaculate spot, widely distant from the front and lateral borders, and separated from the hind border only by the very margin itself; its front border is subrect, very slightly and angularly excavated in the middle, the upper outer angles rounded, the spot narrowing posteriorly, its sides a little hollowed in

the middle, and its hinder border well rounded. Tegmina testaceous, the costal edge ferruginous, a narrow, black, humeral stripe of equal width throughout, scarcely as long as the pronotum; apical half of the tegmina faintly tinged with fuliginous, commencing at the end of the anal field and widening posteriorly, but not including any of the costal field; wings hyaline; costal border testaceous. Legs black; meso- and metanotum luteous, spotted with blackish fuscous. Abdomen blackish fuscous above, the sides narrowly edged with testaceous; the supraanal plate testaceous, fuscous at base; abdomen below black, with some obscure dull luteous markings on the basal segments; terminal segment narrowly bordered posteriorly with ferruginous; anal cerci moderately long, tapering slightly, bluntly rounded at tip, blackish. Length of body 1.92 in.; of body including the tegmina 2.58 in.; of antennæ 1.3 in.; of pronotum .52 in.; breadth of same .75 in. It is nearly related to *B. gigantea*. One ♂. Napo or Marañon.

Other Blattariæ were obtained, but either young specimens, or too mutilated to bear description.

FORFICULARIÆ.

38. *Chelidura robusta* nov. sp.

Head piceous; labrum slightly reddish; mouth parts and first and part of second joints of antennæ reddish. Prothorax, tegmina, abdomen and forceps piceous; pronotum docked squarely in front, the lateral angles square, the hind border well rounded, convex, the lateral borders slightly marginate; a finely graven median line. Tegmina short, quadrate, smooth; upper surface and sides of abdominal segments minutely, the penultimate segment also profusely punctured. Legs brownish yellow. Forceps stout, trigonal, beneath flat, straight nearly to the tip, the lower surface for this same distance furnished interiorly with a minute blade; the tips are bent toward each other, but not strongly. Length of body including forceps .9 in.; of forceps, .2 in.; of tegmina, .12 in.; width of pronotum, .12 in. Two ♂. Between Quito and Napo, and at Napo.

39. *Psalidophora nigripennis* nov. sp.

Piceous; pronotum and front of head, shining, the former bordered laterally with dull luteous. Head broader than the pronotum, smooth; the long, basal and minute, second joint of antennæ black; remaining joints, like the palpi, fusco-rufous. Pronotum quadrate, the posterior border broadly rounded; a very slight median carina. Tegmina and exposed parts of wings black, densely and most minutely punctured, and furnished with a very few fine, distant, long, erect hairs. Femora

black, tibiæ and tarsi luteous. Abdomen blackish at the sides and along the posterior edges of the segments, and blackish fuscous in the middle. Length of pronotum, .05 in.; of tegmina, .11 in.; of hind femora, .12 in. One specimen (with forceps broken) was taken between Quito and Napo.

40. *Labia bilineata* nov. sp.

Piceous, with infrequent, short, decumbent, lustrous hairs; head minutely punctured; basal joints of antennæ luteous; palpi blackish fuscous. Pronotum quadrate with a slight median furrow, not attaining either margin; the sides faintly bordered with dull luteous. Tegmina smooth, with a broad, pale luteous, humeral stripe reaching neither the outer border nor the humerus nor apex; exposed portion of wings marked indistinctly with luteous on the inner edge at the tip and near the outer border. Basal half of femora black, outer half luteous; tibiæ brownish fuscous, the apex paler; tarsi dull fusco-luteous, the basal joints paler; abdomen blackish, densely punctured, the hinder edges above fusco-rufous. Forceps straight, parallel, incurved a little at the tip, under surface flat, the inner, inferior edge denticulate. Length of body including forceps, .34 in.; of tegmina, .05 in.; of forceps, .06 in. One ♀, the hind legs of which are lost and the antennæ broken, was taken between Quito and Napo.

The following paper was also presented:—

A STUDY OF THE GIGANTIC LOBE-CRESTED GRASSHOPPERS OF SOUTH AND CENTRAL AMERICA. BY SAMUEL H. SCUDDER.

An examination of the gigantic crested grasshoppers, mentioned in the previous paper, has induced me to review the whole group. Some errors have been detected in the work of preceding authors, showing that they have given but comparatively slight attention to these insects or to their representation by earlier writers;¹ in consequence, the synonymy of several well known species, as will be seen beyond, has become greatly confused.²

¹For instance, Serville and Burmeister, in quoting Drury's description and figure of *Gryllus duze*, copy the mistake which Fabricius makes and repeats in all his works, of referring to the first instead of the second volume of the Illustrations of Natural History.

²This seems the more remarkable, since an examination of many scores of specimens has shown that the variability of these huge Orthoptera is comparatively slight. I have compared over fifty specimens of a single species, *Tropidacris crivata*, occurring in many different localities from Surinam to Rio, and find the variation to be insignificant,—a fact which has given me greater confidence in the opinions I had formed concerning the different species.